mimic the role of filgrastim (F), resulting in at least an equivalent shortening of post-PBSCT neutropenia.

NHL patients over the age of 18 years who were deemed eligible for PBSCT were identified prior to the administration of high-dose chemotherapy, and following adequate harvest and cryopreservation of peripheral blood progenitor cells (ie, $> 2.5 \times 10^6$ CD34+ cells/kg). Eligible patients with preserved end organ function received either standard BEAM or BEAC high-dose chemotherapy. Prior to high-dose therapy, patients were randomly assigned to receive either P at a fixed-dose of 6 mg on Day +1(Arm A), or weight-based, dose-adjusted F rounded to the nearest prefilled syringe beginning on Day +1(Arm B) following transplantation.

One-hundred one eligible patients were enrolled within US Oncology Transplant Network between July 2003 and April 2007. Three patients were deemed ineligible (CHF death, consent withdrawn, other). The analyses and results presented below outline the remaining 98. The demographic characteristics of both arms were well-balanced with regards to stage at diagnosis and treatment, ECOG Performance Status, histology, and lines of prior therapy. The comparison of P vs F is summarized in the table that follows.

Transplant-related mortality and the incidence of Grade 3–4 adverse events were comparable in both arms.

In conclusion, administration of pegfilgrastim post-PBSCT appears to be equivalent to multiple daily doses of filgrastim. Such an approach might be considered in lieu of filgrastim thereby obviating the need for multiple daily injections.

Comparison of Pegfilgrastim (P) versus Filgrastim (F)

Variable	Arm A (Pegfilgrastim)	Arm B (Filgrastim)
No. of Patients Treated (n)	50	48
Doses Received (mean ± SD)	1.0 ± 0	12.7 ± 2.6
ANC Recovery (days) (mean ± SD)	8.3 ± 1.1	8.9 ± 1.5
RBC Transfusions (mean ± SD)	1.7 ± 0.9	1.9 ± 1.2
Platelet Transfusions (mean ± SD)	3.0 ± 1.9	2.8 ± 1.8
Positive Blood Culture Rate (%)	18.0%	29.0%
Febrile Neutropenia Rate (FN) (%)	18.0%	16.7%
Duration of FN (days) (mean ± SD)	5.1 ± 3.4	5.5 ± 4.9

80

PRIMARY CMV INFECTION IN CMV SERONEGATIVE RECIPIENTS OF A STEM CELL PRODUCT FROM A SEROPOSITIVE DONOR (D+/R-): FREQUENCY OF AND RISK FACTORS FOR TRANSMISSION

Sandhu, R.K., Smith, J., Kirby, K.A., Heimfeld, S., Corey, L., Boeckh, M. Fred Hutchinson Cancer Research Center, Seattle, WA.

Background: To evaluate if there is an effect of host and donor factors in developing primary CMV infection in CMV D+/R- hematopoietic stem cell transplant (HCT) recipients. **Method:** Between 1/1996 and 12/2006, 392 D+/R- patients undergoing 1st allogeneic HCT were evaluated retrospectively for host and donor factors that may affect CMV transmission (recipient and donor age, race, sex, and ABO type, stem cell source, stem cell types [CD14, CD34, mononuclear cells] and overall number, underlying disease risk, conditioning regimen, GVHD prophylaxis, acute GVHD, TBI). Patients were evaluated for CMV antigenemia (AG) and/or DNAemia until day 100 after HCT. Factors associated with CMV transmission were evaluated by Cox regression models. All patients received preemptive antiviral therapy for AG positivity. **Results:** Of 392 D+/R- patients 383 (97.7%) were monitored regularly (AG: 345, AG and PCR: 29, PCR: 9) while and 9 (2.3%) were not tested because of early death. By day 100, 57 patients (14.5%) became antigenemia or PCR positive (50/345 [14.5%] by AG, 7/29 [24.2%] by AG and PCR, and 0% by PCR only); 3 additional patients became positive at sites other than blood. CMV disease occurred in 13 patients (3.3%) at a median of 111 days after HCT (range 19–617 days). Of these, 6 cases occurred before day 100 (incidence 1.5%) and 7 after day 100 (2.2% of patients alive at day 100). Five patients with CMV disease after day 100 had CMV infection diagnosed before day 100, resulting in an incidence of 8.8% among those with early CMV infection. No statistically significant risk factors for CMV transmission via blood or marrow were identified. However, ABO blood group B (hazard ratio 0.2, 95% CI 0.1–1.0, P = 0.05, compared to all other groups) and the total number of cells/kg transfused (HR 1.8, 95% 0.9–3.8, P = 0.09, for values above the 90th percentile) were borderline significant in multivariable models. **Conclusions:** Transmision of CMV via marrow or stem cells is uncommon. Although no significant risk factors were identified, the observed trends for cell counts and ABO blood groups are interesting and suggest that the inoculum and perhaps genetic factors may be important in determining transmission risk.

81

PERFORMANCE STATUS, BUT NOT THE HEMATOPOIETIC CELL TRANSPLANTATION COMORBIDITY INDEX (HCT-CI), PREDICTS MORTALITY AT A CANADIAN TRANSPLANT CENTRE

Guilfoyle, R.[1], Demers, A.[2], Richardson, E.[3], Bredeson, C.[4], Seftel, M.[1,3]. [1] University of Manitoba, Winnipeg, MB, Canada; [2] CancerCare Manitoba, Winnipeg, MB, Canada; [3] CancerCare Manitoba, Winnipeg, MB, Canada; [4] Medical College of Wisconsin, Milwaukee, WI.

Introduction: The hematopoietic cell transplantation-specific comorbidity index (HCT-CI) was developed at a single centre in order to predict outcomes for allogeneic transplant recipients who have comorbidities. This index had a higher predictive power for non-relapse mortality (NRM) and overall survival (OS) than other tools such as the Charlson Comorbidity Index. The HCT-CI has, to our knowledge, not been validated in unselected transplant recipients at an institution outside the US. We evaluated whether the HCT-CI predicts NRM and OS at a Canadian institution and whether other readily available pre-transplant variables can predict NRM and OS. **Methods:** Using a prospective cohort design, we analyzed consecutive adult allogeneic HCT recipients between 01/1990 and 12/2005. Comorbidity was scored according to the HCT-CI. Kaplan-Meier survival curves were generated and hazard ratios were calculated using the Cox model. **Results:** Of 187 patients, 64 had AML or MDS, 40 had CML, and 83 had other diagnoses. Preparative regimens were myeloablative in 177 (95%). Grafts were from related donors in 138 (74%). Stem cell source was marrow in 134 (72%), peripheral blood in 51 (27%), and both in 2 (1%). HCT-CI risk was low in 22 (12%), intermediate in 50 (27%) and high in 104 (55%). Two year OS was 45% (95% CI: 24%-64%), 55% (95% CI: 40%-68%), and 42% (95% CI: 32%-51%) in the low, intermediate and high risk HCT-CI groups respectively. Two year NRM was 40% (95% CI: 21%-65%), 28% (95% CI: 17%-43%), and 34% (95% CI: 25%-44%) in the low, intermediate, and high risk groups, respectively. In both univariate and multivariate analyses, the HCT-CI was not a significant predictor of OS or NRM. In contrast, a KPS of < 90% at HCT was a strong predictor of post HCT OS and NRM. **Conclusions:** The HCT-CI failed to predict NRM or OS at a Canadian transplant institution. In contrast, KPS appeared to be a powerful independent indicator of post-transplant survival. We suggest that large, multicentre studies are required before the HCT-CI can be applied in clinical practice.

82

SEVERE HEMORRHAGIC CYSTITIS (HC) AFTER ALLOGENEIC HEMATOPOEITIC STEM CELL TRANSPLANTATION (HSCT): INCIDENCE AND RISK FACTORS

Smith, A.R.[1], Tolar, J.[1], DeFor, T.E.[3], Weisdorf, D.J.[2], MacMillan, M.L.[1]. [1] University of Minnesota, Minneapolis, MN; [2] University of Minnesota, Minneapolis, MN; [3] University of Minnesota, Minneapolis, MN.

HC is a major source of morbidity after HSCT. Severe HC often results in prolonged hospitalizations, increased health care costs, decreased quality of life and, rarely, death. Further elucidating risk factors may lead to preventive strategies and early treatment. We reviewed 208 cases of HC which occurred in 1353 allogeneic HSCT recipients transplanted at the University of Minnesota from 1995–2006. Severe HC was defined as urinary clots and bladder pain requiring bladder irrigation and/or sequelae such as urethral and/or ureteral obstruction, renal failure and or the need for surgical or chemical bladder cautery or coagulation. A total of 72

patients (5%) developed severe HC by day +100 after HSCT. There were 22 (4.2%) cases in related donor (RD) recipients, 18 (4.5%) cases in unrelated donor (URD) recipients and 32 (7.4%) cases in URD umbilical cord blood (UCB) recipients. In multivariate analysis, factors associated with an increased risk of severe HC included age >18 yrs (RR 2.4 vs. 1.0 in those <18 yrs [95% CI 1.7 – 3.6, p < .01]), receiving busulfan as part of the conditioning regimen (RR 2.6 vs. 1.0 in those whose conditioning regimen did not include busulfan [95% CI 1.6 – 4.3, p < .01]), receiving an URD or UCB stem cells (RR 1.7, 95% CI 1.2 – 2.3, p < .01 and RR 1.5, 95% CI 1.0 – 2.2, p = .05, respectively when compared to RD bone marrow) and receiving myeloablative conditioning (RR 1.0 vs. 0.6 for nonmyeloablative conditioning (p = .03). With respect to patient diagnosis, Fanconi anemia was associated with a higher risk of severe HC (RR 2.1 vs. 1.0 for SAA/Immune deficiencies/Hematologic disorders, [95% CI 1.0 – 4.3, p.04]) while a diagnosis of storage disorder was associated with a decreased risk of severe HC (RR 0.4 vs. 1.0 for SAA/Immune deficiencies/Hematologic disorders, [95% CI 0.2 – 0.9, p.03]).

The results of our study examining patients transplanted in the last decade show a similar incidence of severe HC as reported in previous studies from our institution. Risk factors (older age, URD or UCB and the use of Busulfan) are also similar except the presence of grades II-IV GVHD is not significantly associated with the development of severe HC in the current analysis. Our current results also indicate that nonmyeloablative transplants are protective with regard to the development of severe HC. Despite regular use of prophylactic measures, severe HC remains a significant problem after HSCT and more effective modalities to prevent and treat it are needed.

83

DOES RESPIRATORY MUSCLE DYSFUNCTION PRIOR TO ALLOGENEIC HEMATOPOIETIC CELL TRANSPLANTATION INFLUENCE THE RISK FOR MORTALITY AFTER TRANSPLANT?

Ramirez-Sarmiento, A.[1], Orozco-Levi, M.[1], Walter, E.C.[2,3], Chien, J.W.[2,3]. [1] Hospital del Mar, Barcelona, Spain; [2] University of Washington School of Medicine, Seattle, WA; [3] Fred Hutchinson Cancer Research Center, Seattle, WA.

The prevalence of restrictive lung disease and respiratory muscle weakness (RMW) prior to allogeneic hematopoietic cell transplant (aHCT) and their relationship with HCT outcomes is unknown. We conducted a 12-year retrospective cohort study to determine the prevalence of pulmonary restriction prior to HCT, and assessed whether prior pulmonary restriction, in particular, pulmonary restriction due to RMW, is associated with an increased risk of developing early respiratory failure and mortality.

Methods: All patients >15 yrs old who received an aHCT at our center between 1990 and 2001 and had pulmonary function testing (PFT) prior to transplant were eligible for analysis (n = 2677). A restrictive lung function pattern was defined as a total lung capacity (TLC) <80% of predicted normal. All patients with restriction had their pre-transplant chest x-rays and/or computed tomography scans reviewed by three pulmonologists to determine whether parenchymal abnormalities were absent, unlikely to cause restriction, or highly likely to cause restriction. Multivariate Cox-proportional hazard analysis was performed to assess the association between restriction and two post-transplant outcomes, early respiratory failure and all cause mortality. **Results:** There were 2677 patients with a mean age of 42 ± 12 yrs and mean body mass index of 26 ± 5 k/m^2. 41.8% (n = 1118) were female. Prevalence of pre-transplant pulmonary restriction was high in all malignancy groups (range, 5–40%) regardless of age or nutritional status. High risk pre-transplant disease was significantly associated with restriction (OR = 2.9, p < 0.001). Review of chest imaging of all patients with restriction revealed that 80% (n = 156) had no radiographic abnormalities likely to cause restriction. Comparison of patients with restriction but no radiographic abnormalities, to nonrestricted patients, revealed a significant stepwise increase in risk for mortality with progressively worse pulmonary restriction (TLC range, 24-<70%; hazard ratio range, 1.8–4.1 p < 0.001 all). **Conclusions:** Presence of pre-transplant pulmonary restriction is associated with higher mortality risk after aHCT. The majority of these restrictive cases are unlikely related to lung parenchymal abnormalities suggesting that respiratory muscle weakness may be a previously unrecognized risk factor for respiratory failure and mortality after transplant.

84

IMPACT OF BRONCHO-ALVEOLAR LAVAGE ON THE DIAGNOSIS AND MANAGEMENT OF PULMONARY COMPLICATIONS POST TRANSPLANT

Yanik, G.[1,2,3], Maslak, J.[1], Connelly, J.[2], Peres, E.[1,2,3], Mineishi, S.[1,3], Levine, J.[1,2,3], Kaul, D.[3]. [1] University of Michigan Medical Center, Ann Arbor, MI; [2] University of Michigan Medical Center, Ann Arbor, MI; [3] University of Michigan Medical Center, Ann Arbor, MI.

The role of fiberoptic bronchoscopy with broncho-alveolar lavage (BAL) in hematopoeitic stem cell transplantation (HSCT) has been examined in a number of small retrospective studies. The largest review of BAL data to date is now reported. Between 2001–2007, 1507 patients underwent HSCT at the University of Michigan Medical Center. Of the 1507 patients, 300 (19.7%) underwent a BAL procedure, including 9.7% of autologous, and 30.4% of allogeneic transplant recipients. Four hundred forty four BAL were performed, 347 following an allogeneic, and 97 following an autologous HSCT.

Results: Potential pathogens were identified in 117 (26.4%) cases, with infections due to fungi (n = 50), viruses (n = 38), bacteria (n = 38), mycobacterium (n = 10), and PCP (n = 6). In 30 BAL procedures, multiple pathogens were noted. Broncho-alveolar lavage had the lowest yield within the first 30 days post allogeneic HSCT, with 89.9% of BAL procedures negative during this time period. At all time points, the likelihood of identifying a pathogen was < 35%. The BAL led to a change in medical management in 58% of cases, including modifications in antimicrobial therapy in 44% and modifications in corticosteroid therapy in 18%. Procedural complications were rare, and included transient hypoxemia (1.3%), hemorrhage (1.3%) and hypotension (0.2%). Radiographically, the presence of nodular lesions, ground glass opacifications, and air space disease on chest CT were more frequently associated with non-infectious BAL findings (Table). Only the appearance of a tree in bud pattern was more likely to be associated with an infectious etiology, primarily fungal disease. **Conclusion:** Broncho-alveolar lavage is a safe procedure in patients following HSCT transplant, frequently modifying medical management. At all time points, the yield for infectious pathogens is < 35%, with non-infectious etiologies common and associated with multiple radiographic changes by CT.

CT findings and % of BAL with pathogen identified

	nodules (s)	nodules (l)	Tree in Bud	Ground glass	Air space disease
+ BAL	26%	42%	64%	25%	18%
− BAL	74%	58%	36%	75%	82%

nodules (s) < 1 cm; nodules (l) > 1 cm.